

## PATENT COOPERATION TREATY

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## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

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<b>Date of mailing</b> (day/month/year) 15 December 2000 (15.12.00)	
<b>International application No.</b> PCT/NZ00/00068	<b>Applicant's or agent's file reference</b> P432319 LPO
<b>International filing date</b> (day/month/year) 05 May 2000 (05.05.00)	<b>Priority date</b> (day/month/year) 05 May 1999 (05.05.99)
<b>Applicant</b> MACKINNON, Bruce, Raymond	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 04 December 2000 (04.12.00)

☐ in a notice effecting later election filed with the International Bureau on:  
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2. The election ☒ was  
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made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Baechler Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

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NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

CALHOUN, Douglas, C.  
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Date of mailing (day/month/year) 15 December 2000 (15.12.00)	<b>IMPORTANT NOTIFICATION</b>
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International application No. PCT/NZ00/00068	International filing date (day/month/year) 05 May 2000 (05.05.00)

## 1. The following indications appeared on record concerning:

☐

the applicant

☐

the inventor

☒

the agent

☐

the common representative

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒

the person

☒

the name

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the address

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the nationality

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the residence

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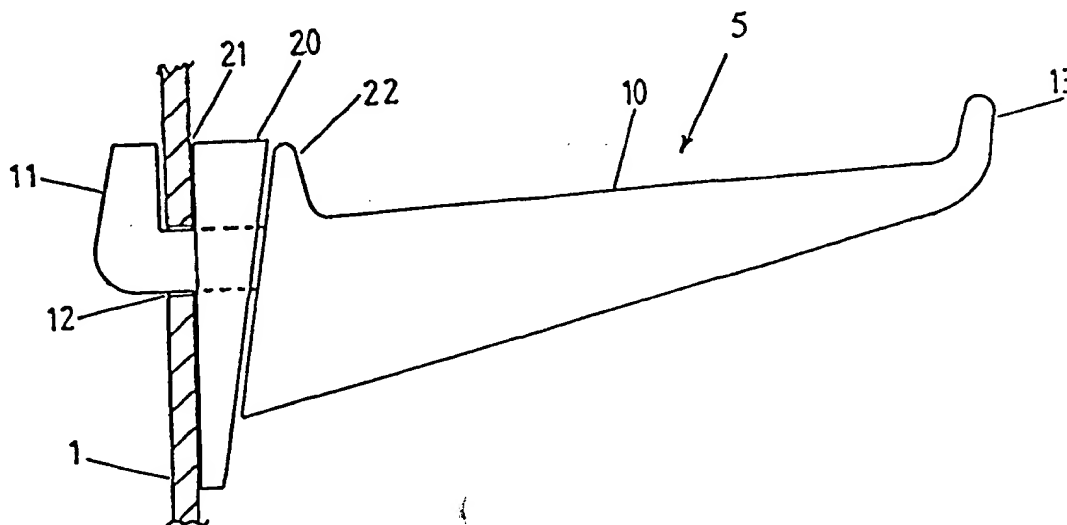
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(54) Title: STEP OR BRACKET DEVICE



(57) Abstract

A bracket device for attachment to a thin walled section (1) comprises: a main member (5) having an operating member (10), and an attachment hook (11) extending from a proximal end (22) of the operating member (10) which in use engages with the thin walled section (1), and a locking wedge (20) associated with the attachment hook (11) which slides in relation to the attachment hook (11) to a locking position to create a reaction force between the attachment hook (11) and the thin walled section (1).

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## STEP OR BRACKET DEVICE

TECHNICAL FIELD

This invention relates to an easily installed removeable bracket device incorporating for example an operating member such as a step or a suspension bracket  
5 for attachment to a steel utility pole, a concrete utility pole incorporating a thin wall section for bracket attachment, or other thin wall section structures.

BACKGROUND ART

Conventional utility poles are manufactured using one of two alternative constructions. Historically they have been either hard or soft wood poles, but with  
10 modern manufacturing techniques thin wall steel poles are also becoming more common. The majority of such poles are employed in either telecommunications or electrical power transmission.

In order to fix faults or to assess the condition of attachments at the top of the pole, it is often necessary for servicemen to scale the pole and work near the top. In the  
15 case of a steel pole this can be accomplished in one of two ways: either by use of a ladder, or by use of steps integrated with the pole itself. The disadvantage to using ladders is that they can be unstable and sometimes not long enough. Therefore the risk of falling from the pole is higher. With wooden poles the use of ladders or the provision of steps is not necessary, because the servicemen are generally able to scale the pole  
20 using clamp-ons and a safety strap.

Increasingly suppliers are requesting that steel pole manufacturers supply their poles with steps already attached, in order to avoid the problems associated with ladders. From the manufacturers perspective this poses a difficulty, due to the additional cost associated with integrating steps with the pole. Typically this may add  
25 up to 20% or more to the production cost of a 40 foot distribution pole, thus putting the steel pole manufacturers at a distinct disadvantage to their wood pole counterparts.

The alternatives for attaching pole steps range from a nut welded to the side of the pole, to a complicated four piece arrangement, shown in FIG. 1, involving a shaped washer 1, a shaped bolt 2, a welded or riveted nut 3 and a pressed steel step 4. These  
30 arrangements are hardly ideal, they are often very unstable, and in some cases are quite unsafe to work on. Also as previously mentioned, a part, that is the nut 3 part, needs to be attached to each pole when manufactured, adding additional costs, and thereby reducing profit margins.

Moreover, there is also a need for bracket devices incorporating an operating member such as, a suspension bracket which is used for example for suspending fiber optic cables, or some other type of line hardware fitting, which can be easily installed and removed from steel utility poles, concrete utility poles incorporating a thin wall section for bracket attachment, or other thin wall section structures.

### DISCLOSURE OF THE INVENTION

The object of this invention is to provide an easily installed removeable bracket device incorporating an operating member such as a step or suspension bracket that overcomes the abovementioned disadvantages.

10 In one aspect, the present invention may be broadly said to consist in a bracket device for attachment to a thin walled section which comprises: a main member having an operating member, and an attachment device extending from a proximal end of the operating member which in use engages with the thin walled section, and a locking device associated with the attachment device which slides in relation to the attachment  
15 device to a locking position to create a reaction force between the attachment device and the thin walled section.

The locking device may comprise any suitable device whereby a reaction force can be created between the attachment device and the thin walled section. For example this may comprise a cam device which is operated by a lever to actuate a cam to  
20 provided the reaction force.

Preferably the main member has a flange portion with the attachment device extending therefrom, and the locking device is a wedge member which is adapted in use to abut against a face of the flange portion.

Preferably the attachment device is terminated with a hook which in use engages  
25 within an aperture provided in a wall of the thin walled section.

Preferably an extremity of the hook is adapted to abut an inner wall of the thin walled section, and the wedge member is adapted when in the locking position to abut against an outer wall of the thin walled section to thereby create a compressive force between the hook and the wedge member to hold the operating member in place.

30 Preferably a slot is provided in the wedge member which in use substantially straddles the attachment device.

Preferably the slot is in the form of an enclosed slot.

Preferably an innermost face of the wedge member is substantially "V" shaped.

Alternatively an innermost face of the wedge member is substantially cylindrically concaved.

In a further alternative an innermost face of the wedge member is substantially  
5 flat.

Preferably the wedge member includes a channel adapted to encompass the flange portion of the main member.

More preferably the wedge member is substantially symmetrical with the channel formed concave matching the opposite side, and the abutting face of the flange  
10 portion of the main member is formed as a complementary convex face.

Alternatively the proximal end of the operating member includes a lower portion which in use locks into the slot to create a reaction force against any rotational torque on the operating member.

Preferably the operating member and the attachment device are constructed of  
15 forged steel.

Alternatively the operating member and the attachment device are constructed of forged aluminum.

Depending on requirements the operating member and the attachment device may be constructed of cast iron or steel or aluminum.

20 In a second aspect the present invention may be broadly said to consist in a method of providing a bracket device for a thin wall section comprising the steps:

- a) forming an aperture in the wall of the thin wall section at a position corresponding to a desired location of a bracket device, and
- b) forming a main member having an operating member and an attachment  
25 device extending from a proximal end of the operating member which in use engages within the aperture and which includes a locking device associated with the attachment device which slides in relation to the attachment device to a locking position to in use secure the attachment device within the aperture.

30 With the present invention as described above, the bracket device can be easily installed and removed from a thin wall section in which a suitable aperture has been

formed. Moreover, the locking device ensures that this is stably secured in place.

The thin wall section may be part of any structure to which it is desired to removably attach a bracket device.

For example this may be part of a steel utility pole, or a thin wall section  
5 incorporated into a concrete utility pole. In this case the operating member may be in the form of a step for supporting a foot of a person wishing to climb the utility pole. Alternatively the operating member may be in the form of a suspension bracket for suspending hardware from the utility pole.

This invention may also be said broadly to consist in the parts, elements and  
10 features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of said parts, elements or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth.

15 The invention consists in the foregoing and also envisages constructions of which the following gives examples.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Further aspects of the present invention will become apparent from the ensuing description which is given by way of example only and with reference to the  
20 accompanying drawings in which;

FIG. 1 is an illustration of a prior art step;

FIG. 2 is an illustration of a steel utility pole with pole steps attached;

FIG. 3 is a cut-away view showing a pole step of FIG. 2 attached to the steel utility pole with a wedge member fitted in place;

25 FIG. 4a is a plan view of the wedge member;

FIG. 4b is a side view of the wedge member;

FIG. 4c is a frontal view of the wedge member viewed from the pole side;

FIG. 5 is a plan view of an alternative wedge member;

FIG. 5a is a perspective view of another alternative wedge member;



FIG. 6a is a plan view of the wedge member in a second embodiment;

FIG. 6b is a frontal view of the wedge member in the second embodiment;

FIG. 7 is a side view of a step of the second embodiment;

FIG. 8 is a side view of a step of a third embodiment; and

- 5        FIG. 9 is perspective views showing attachment devices according to the present invention having various operating members.

### BEST MODE FOR CARRYING OUT THE INVENTION

The invention as principally described in the preferred embodiments is a pole  
step for attachment to a steel utility pole which is able to be easily attached to and  
10 removed from the pole as and when required. The step is locked in place once attached,  
using a wedge member to ensure that it provides a secure and firm platform from which  
servicemen can work. The wedge member may be adapted to fit any shape of utility  
pole, and be repeatably attached and removed by servicemen each time they need to  
scale a pole.

15        A typical steel utility pole 1, shown in FIG. 2, is used by utilities to carry their  
wires 2. Steps 3 are spaced at even intervals to allow the servicemen (not shown) to  
scale the pole 1 to a point where the serviceman can work on attachments 4 at the top  
of the pole 5. Steps are not provided on the lower section of the pole so as to stop  
passers-by from being able to scale the pole 1. The servicemen will scale a first step 6  
20 using a ladder (not shown) or some other climbing means.

The pole step 3, as shown in more detail in FIG. 3, is designed to be removably  
attached to the pole 1. The step 3 is comprised of a main member generally indicated  
by arrow 5 having a tapered support surface 10 (operating member) for the servicemen  
to stand on while climbing the pole 1 or while working on the attachments 4. Integral  
25 with the support surface 10 is a hook 11 (attachment device) which is leverably inserted  
into a hole 12 in the exterior of the pole 1 and which provides an opposing force to hold  
the step 3 in place. The support surface 10 is terminated at its distal end with a lip 13  
to prevent the footwear of the serviceman from slipping off the edge of the support  
surface 10. The main member 5 including the support surface 10 and the integral hook  
30 11 may be constructed either from cast aluminum, cast SG iron, forged steel or any  
other robust material.

A wedge member 20 is designed such that once the hook 11 has been inserted

into the interior of the pole 1, the wedge member 20 can be inserted between the exterior 21 of the pole 1 and a flange portion 22 of the main member 5. Once inserted the wedge member 20 will lock the main member 5 in place providing firm vertical and horizontal support such that any servicemen will be assured a safe working platform.

5           The wedge member 20, shown in more detail in FIGS. 4a, 4b and 4c is tapered on two sides 30, 31 and on one face 32. Looking towards the pole, shown in FIG. 4c, the wedge member 20 sides 30 and 31 are tapered, being widest at a lowermost portion 33 and narrowest at an uppermost portion 34. This can be seen in more detail in FIG. 4a. Looking now from the side shown in FIG. 4b (parallel to the side of the face of the  
10 pole 1), the outermost faces 32 and 35 of the wedge member 20 are tapered, being widest at the uppermost portion 34 and narrowest at the lowermost portion 33.

          Preferably the taper angle between the outermost faces 32 and 35 of the wedge member 20 is such as to give a wedge angle of from 3.5 to 5 degrees. This is to ensure self locking of the wedge member 20 when, after the hook 11 is inserted into the hole  
15 12, the wedge member 20 is dropped and firmly seated in place from above. Moreover, the contact faces 32 and 35 of the wedge member 20 and/or the contact face of the flange portion 22 may be formed with a roughened or serrated surface to enhance securement.

          Furthermore, as shown by the dotted lines in FIG. 4c, at the lowermost portion  
20 33, a bridge portion 36 may be formed either integrally or attached, thus closing off a slot 51 (described later) to give an enclosed slot. Having such a bridge portion 36 has the advantage that the main member 4 and the wedge member 20 combination can be installed using only one hand. In this case, the hook 11 is first inserted through the central opening (slot 51) of the wedge member 20 to suspend the wedge member 20, and  
25 is then inserted into the hole 12. The wedge member 20 can then be swung upwards through 180 degrees into position and dropped into place, and then tapped in tightly.

          Looking now from above, seen in FIG. 4a, the innermost face 40 of the wedge member 20 is substantially cylindrically concaved, with small flat sections 41 (shown dotted in FIG. 4a and 4c) on either side. The cylindrically concaved innermost face 40  
30 is designed to adapt to circular poles, with the flat sections 41 provided for where the wedge member 20 faces a flat surface, for example larger poles with hexagonal or dodecanol faces. The innermost face 40 is tapered to match the typical shape of a conventional steel utility pole. For more reliable securement on larger poles with wide faces, an alternative wedge member, as shown in FIG. 5, can be used with a completely  
35 flat innermost face 50.

To accommodate the shaft of the hook 11, the slot 51 is provided in the body of the wedge member 20. A channel 52 (also shown in dotted outline in FIG. 4c) is formed in the outermost face of the wedge member 20 to accommodate the flange portion 22 of the step 10, to ensure once in place, the step 10 cannot rotate out of its correct position. It should be noted that details of the edge of this channel 52 are omitted from FIG. 3, which effectively shows a section view.

The channel 52 may be formed as shown in FIG. 4a in a rectangular shape in cross-section in the case where the flange portion 22 of the step 10 is of a matching shape.

FIG. 5a shows an alternative wedge member generally indicated by arrow 54. Here the wedge member 54 comprises an outer face 55 (channel) formed as a concave shape (here a concave "V" shape) the same or approximately the same shape as an inner face 56, and having an enclosed slot with a bridge portion 57. In this case the face of the flange portion 22 of the main member 5, while not shown specifically, is formed as a matching convex surface (a convex "V" shape). With such an arrangement the wedge member 54 can be made symmetrical with the inner face 56 still adequately matching the typical shape of a conventional steel utility pole. Moreover, the engagement of the matching faces of the convex surface of the flange portion 22 and the concave surface of the outer face 55 ensures that once in place, the step 10 cannot rotate out of its correct position.

The wedge member 20 may be manufactured using SG iron, forged steel, injection molded plastic, aluminum or alternatively using rubber, or any other suitably robust material.

In a second embodiment, an alternative wedge member 61 is shown in FIG. 6a without tapering sides, and can be constructed using slightly less material than that described in the preceding embodiment for the wedge member 20. Looking now from above, an innermost face 60 of the wedge member 61 is substantially "V" shaped and substantially rectangular in outline. Looking from the pole side, shown in FIG. 6b the "V" is tapered to substantially match the typical shape of a conventional steel utility pole. The flat sections 62 are widest at the uppermost portion 63 and taper to nothing at the lowermost portion 64.

In the second embodiment, the step 70 shown in FIG. 7 is provided with a key portion 71 protruding from a flange portion 72 which is designed to fit into a slot 73 of the wedge member 61. Once locked in place, this prevents the step 70 from rotating, thus ensuring that the step 70 stays locked in place.

In a third embodiment shown in FIG. 8, a step 80, a hook 81 and a wedge member 82 are all movable relative to one another. With this embodiment the hook 81 is leverably inserted into a hole 83 in a steel utility pole 84, with the wedge member 82 in an upper position 85. The hook 81 has grooves 86 in both sides which the wedge member 82 engages with. With the hook 81 inserted into a hole 83 in the exterior of a pole 84, the wedge member 82 is brought to a lower locked position 87. The movement of the wedge member 82 causes the distal side 88 of the groove to experience a lateral force, effecting a compressive force on the wall of the pole 84 between an end of the hook 89 and a flange portion 90 of the step 80.

It will be apparent from the description that a step design such as that described will be equally applicable to any application which requires an object to be suspended from a thin wall hollow structure. Examples include the suspension of fiber optic cables and many other line hardware fittings.

FIG. 9 is perspective views showing various main members of attachment devices according to the present invention having various operating members. In these figures, parts having the same function as described for the previous attachment device are denoted by the same reference numerals and detailed description thereof is omitted.

FIG. 9a shows a main member 90 having a ring operating member 91.

FIG. 9b shows main member having 92 having a hook operating member 93.

FIG. 9c shows main member 94 having a tongue operating member 95.

FIG. 9d shows main member 96 having a clevis operating member 97.

FIG. 9e shows main member 98 having a ball eye operating member 99.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope of the invention as defined by the appended claims.

#### INDUSTRIAL APPLICABILITY

The bracket device of the present invention provides an easily installed removable bracket device incorporating an operating member such as a step or suspension bracket, which overcomes problems with conventional methods and devices for attaching a bracket to a thin walled section. The bracket device thus offers many possible industrial applications.

What I claim is:

1. A bracket device for attachment to a thin walled section which comprises:  
  
a main member having an operating member, and attachment means extending from a proximal end of said operating member which in use engages with said thin  
5 walled section, and  
  
locking means associated with said attachment means which is adapted to slide in relation to said attachment means to a locking position to create a reaction force between said attachment means and said thin walled section.
2. A bracket device according to claim 1, wherein said main member has a flange  
10 portion with said attachment means extending therefrom, and said locking means is a wedge member which is adapted to abut against a face of said flange portion when in said locking position.
3. A bracket device according to either one of claim 1 and claim 2, wherein said  
15 attachment means is terminated with a hook which in use engages within an aperture provided in a wall of said thin walled section.
4. A bracket device according to claim 3, wherein an extremity of said hook is  
adapted to abut an inner wall of said thin walled section, and said wedge member is  
adapted when in said locking position to abut against an outer wall of said thin walled  
20 section to thereby create a compressive force between said hook and said wedge member to hold said operating member in place.
5. A bracket device according to any one of claim 2 through claim 4, wherein a slot  
is provided in said wedge member which in use substantially straddles said attachment  
means.
6. A bracket device according to any one of claim 2 through claim 5, wherein said  
25 wedge member includes a channel adapted to encompass said flange portion of said main member.
7. A bracket device according to claim 5, wherein said proximal end of said  
operating member includes a lower portion which in use locks into said slot to create a  
reaction force against any rotational torque on said operating member.
- 30 8. A bracket device according to any one of claim 1 through claim 7, wherein said  
operating member is a step for attachment to a utility pole having a thin wall section.

9. A bracket device according to any one of claim 1 through claim 7, wherein said operating member is a suspension bracket for suspending hardware from a utility pole having a thin wall section.
10. A step for attachment to a utility pole having a thin wall section which  
5 comprises:
- a main member having an step member with a flange portion formed at a proximal end thereof, and attachment means extending from a face of said flange portion and terminated in a hook which in use engages within an aperture provided in a wall of said thin walled section, and
- 10 a wedge member which is adapted to slide in relation to said attachment means and abut against said face of said flange portion when in a locking position, to thereby create a compressive force between said hook and said wedge member to hold said step member in place.
11. A wedge member for a bracket device comprising a main body formed with an  
15 enclosed slot, and having an inner face and an outer face inclined relative to each other at an angle of from 3.5 to 5 degrees, said inner face and said outer face each being formed with a concave channel of substantially the same shape in cross section along a full length thereof,
12. A main member for a bracket device according to any one of claim 1 through  
20 claim 10.
13. A wedge member for a bracket device according to any one of claim 2 through claim 10.
14. A method of providing a bracket device for a thin wall section comprising the steps:
- 25 a) forming an aperture in the wall of said thin wall section at a position corresponding to a desired location of a bracket device, and
- b) forming a main member having an operating member and attachment means extending from a proximal end of said operating member which in use engages within said aperture and which includes locking means associated with  
30 said attachment means which slides in relation to said attachment means to a locking position to in use secure said attachment means within said aperture.

15. A bracket device substantially as described herein with reference to figure 2 through figure 9.
16. A method of providing a bracket device for a thin wall section substantially as described herein with reference to figure 2 through figure 9.

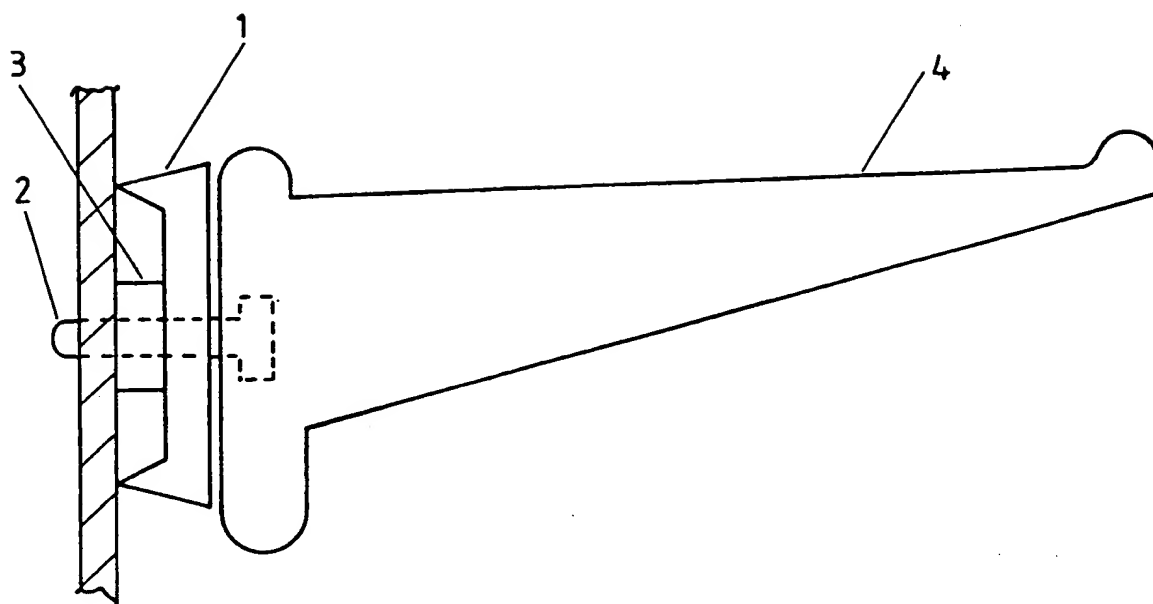


FIG. 1 (Prior Art)

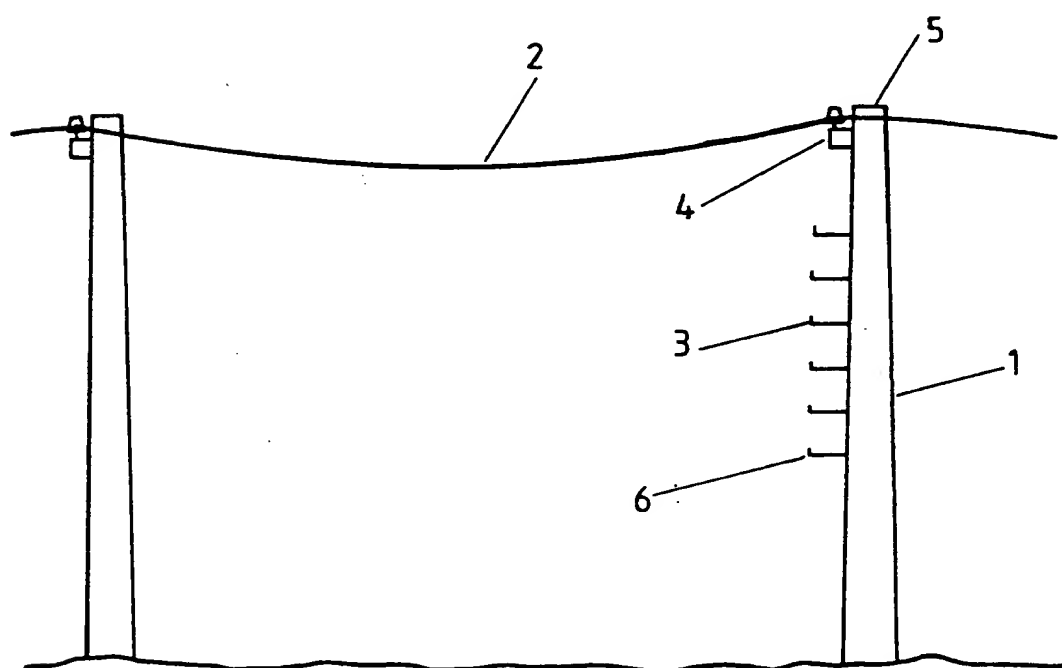


FIG. 2



FIG. 3

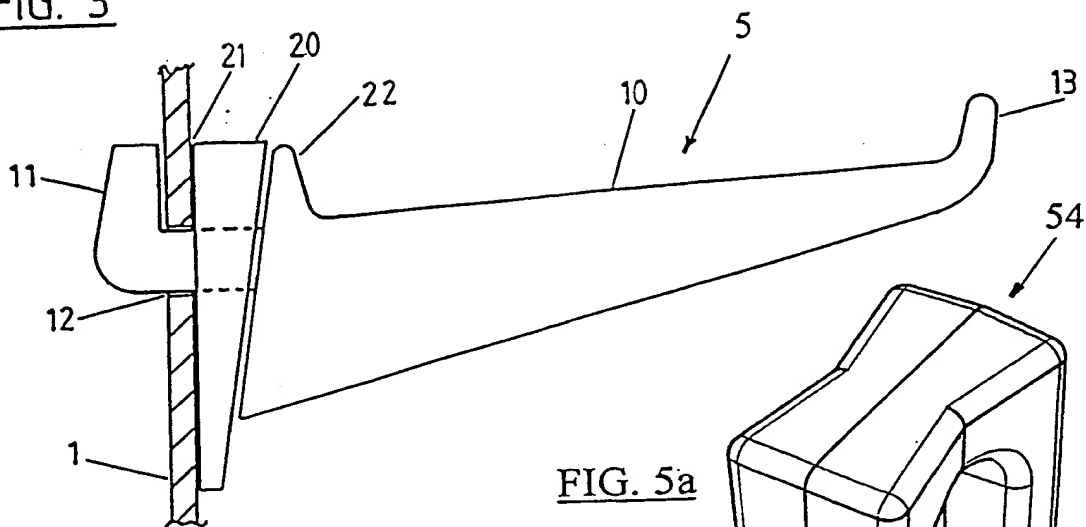


FIG. 4a

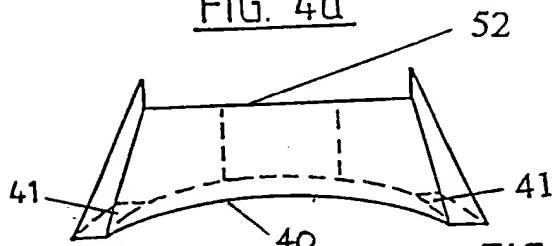


FIG. 4b

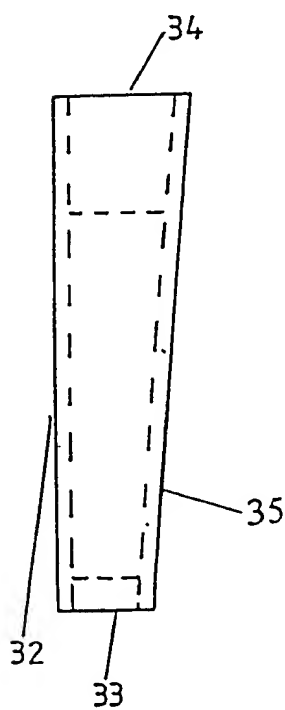


FIG. 4c

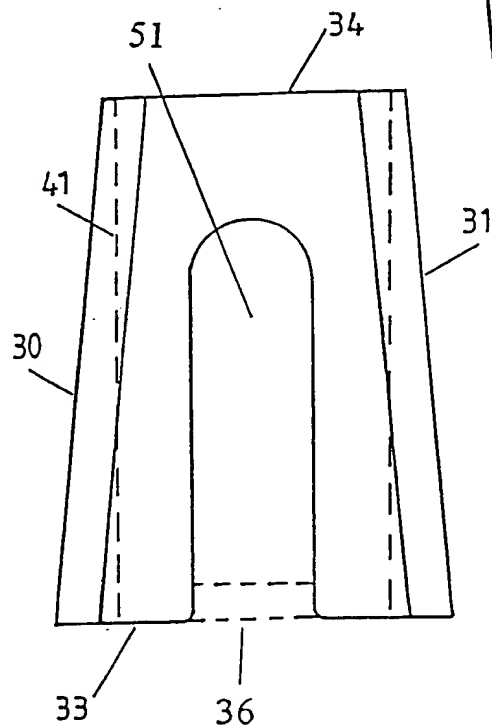


FIG. 5a

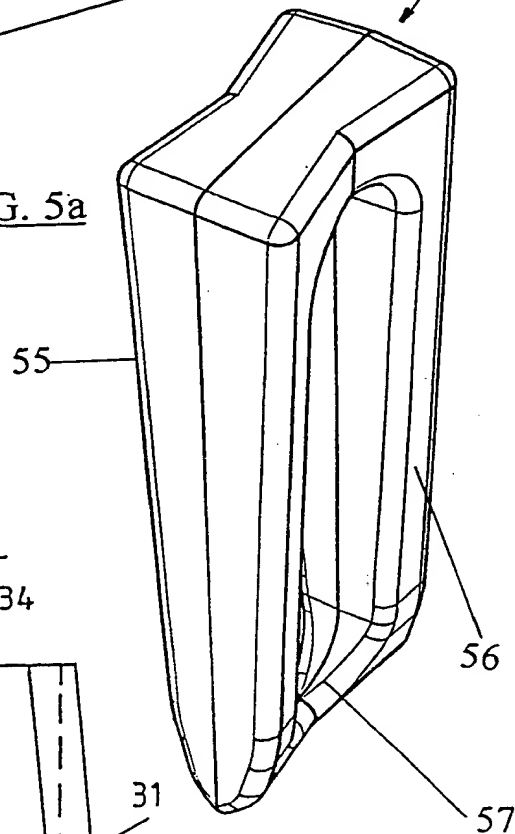
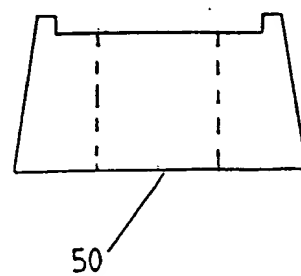


FIG. 5



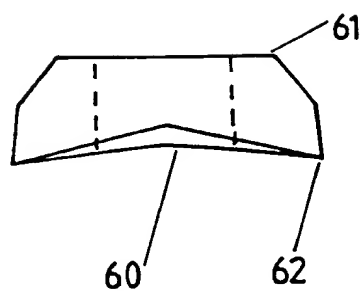


FIG. 6a

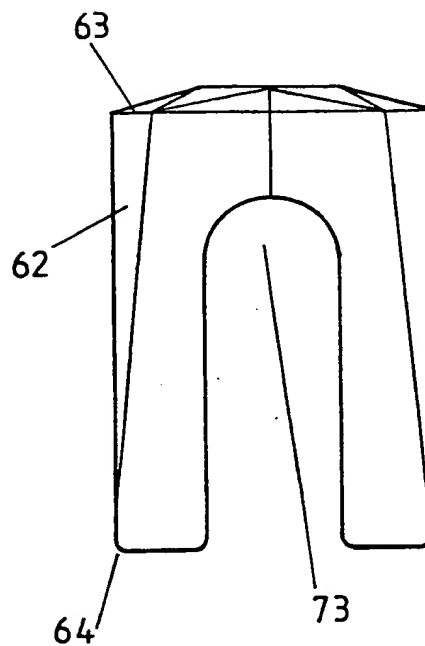


FIG. 6b

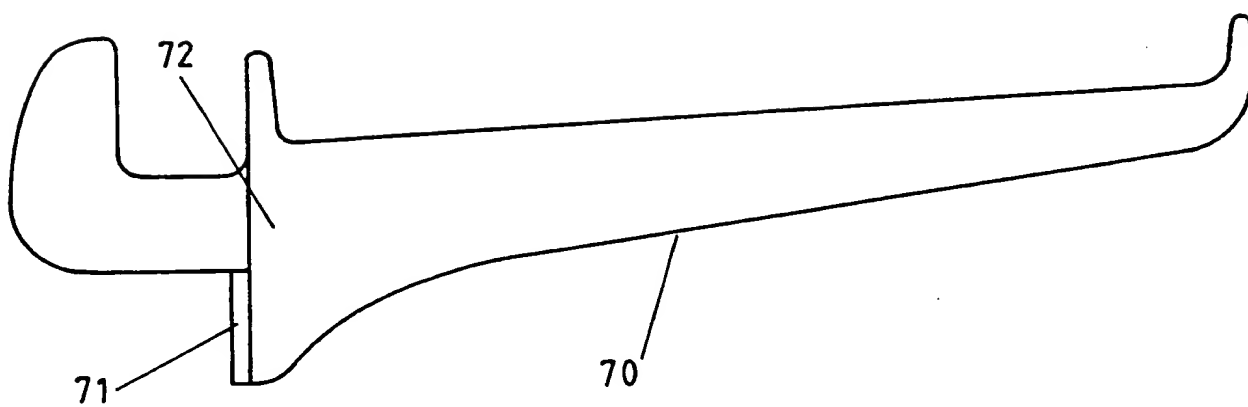
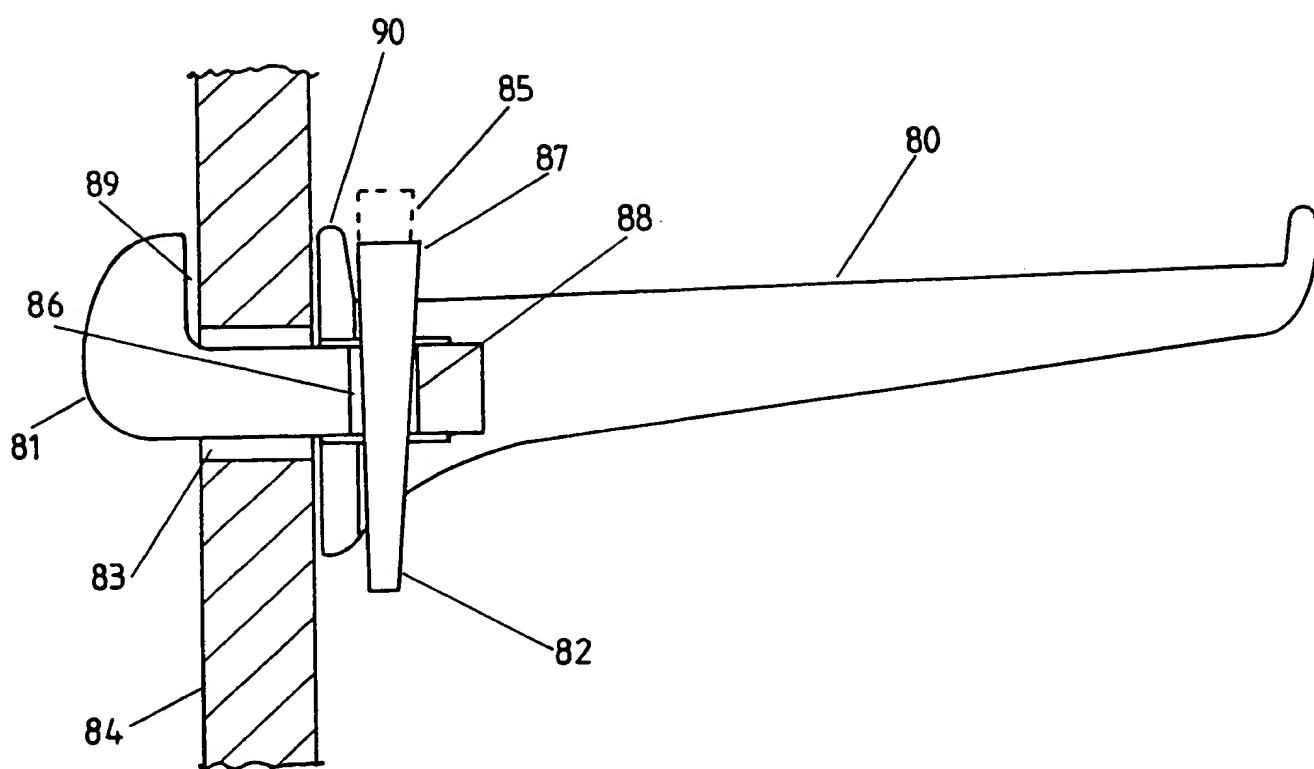
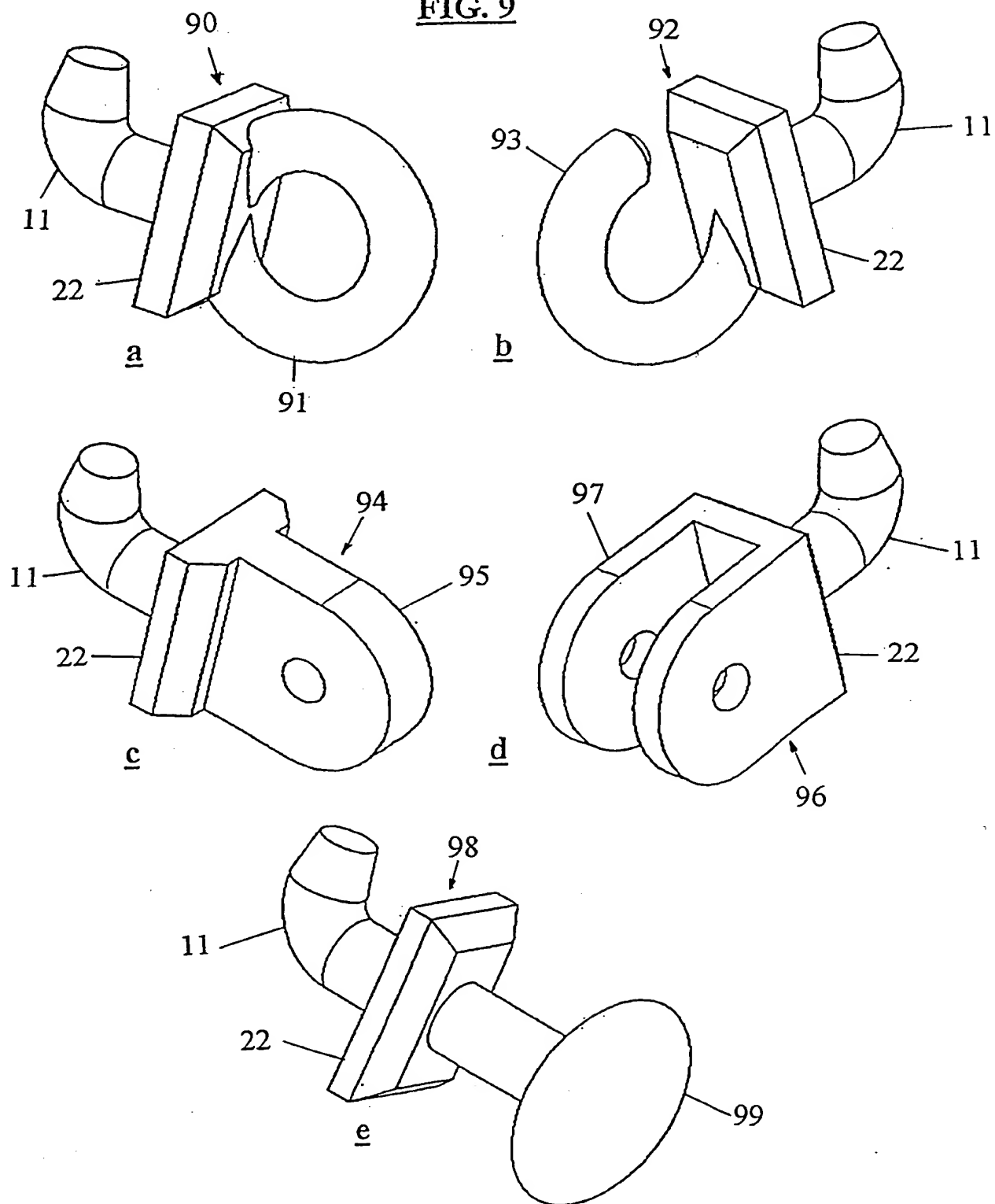


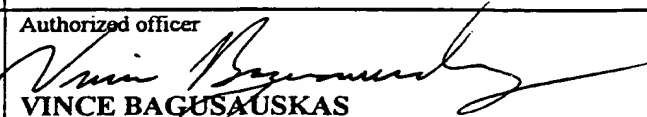
FIG. 7

FIG. 8

**FIG. 9**

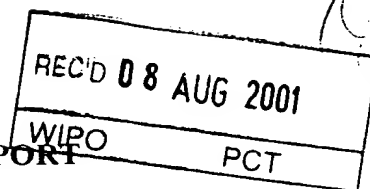
## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/NZ00/00068

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int. Cl. <sup>7</sup> : E06C 1/36, E04H 12/00, A47B 57/16, 57/26, 57/42, 57/56		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT: & keywords		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5941485 A (DAVIDSON et. al.) 24 August 1999	
X	US 4534529 A (DORNER) 13 August 1985	1, 3, 4, 8, 9, 12, 13
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input type="checkbox"/> See patent family annex		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>		
Date of the actual completion of the international search 28 September 2000		Date of mailing of the international search report 4 OCT 2000
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  VINCE BAGUSAUSKAS Telephone No. (02) 6283 2110

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P432319 LPO/jmr	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. <b>PCT/NZ00/00068</b>	International Filing Date ( <i>day/month/year</i> ) 5 May 2000	Priority Date ( <i>day/month/year</i> ) 5 May 1999
International Patent Classification (IPC) or national classification and IPC  Int. Cl. <sup>7</sup> E06C 1/36, E04H 12/00, A47B 57/16, 57/42, 57/56		
Applicant  MACKINNON, Bruce Raymond		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 4 sheet(s).

3. This report contains indications relating to the following items:
- |      |                                     |   |
|------|-------------------------------------|---|
| I    | <input checked="" type="checkbox"/> | Basis of the report   |
| II   | <input type="checkbox"/>            | Priority  |
| III  | <input type="checkbox"/>            | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| IV   | <input type="checkbox"/>            | Lack of unity of invention  |
| V    | <input checked="" type="checkbox"/> | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI   | <input type="checkbox"/>            | Certain documents cited   |
| VII  | <input type="checkbox"/>            | Certain defects in the international application  |
| VIII | <input type="checkbox"/>            | Certain observations on the international application   |

Date of submission of the demand 4 December 2000	Date of completion of the report 19 April 2001
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  <b>VINCE BAGUSAUSKAS</b> Telephone No. (02) 6283 2110

**I. Basis of the report**

1. With regard to the **elements** of the international application:\*
- ☐ the international application as originally filed.
- ☒ the description, pages **1 to 8**, as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,  
pages , as amended (together with any statement) under Article 19,  
pages , filed with the demand,  
pages **1 to 4**, received on **11 April 2001** with the letter of **10 April 2001**
- ☒ the drawings, pages **1 to 5**, as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the sequence listing part of the description:  
pages , as originally filed  
pages , filed with the demand  
pages , received on with the letter of
2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, was on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <b>1 to 23</b>	<b>YES</b>
	Claims	<b>NO</b>
Inventive step (IS)	Claims <b>1 to 23</b>	<b>YES</b>
	Claims	<b>NO</b>
Industrial applicability (IA)	Claims <b>1 to 23</b>	<b>YES</b>
	Claims	<b>NO</b>

**2. Citations and explanations (Rule 70.7)**

D1) US 5941485

D2) US 4534529

None of the citations discloses a main member having an attachment means inserted into a single hole in a thin walled member, and a locking means that is adapted to slide in relation to the attachment means to a locking position to create a reaction force between the attachment means and the thin walled section.

Therefore the invention is both novel and inventive.



CLAIMS

1. A bracket device for attachment to a thin walled section which comprises:

5 a main member having an operating member and attachment means extending from a proximal end of said operating member which in use engage said thin walled section through a single opening in said thin walled section, said main member having no other such attachment means and

10 locking means associated with said attachment means which is adapted to slide in relation to said attachment means to a locking position to create a reaction force between said attachment means and said thin walled section.

2. A bracket device according to claim 1, wherein said operating member has a flange portion, said attachment means extends from the proximal side of said flange portion, and said locking means is a wedge member which is adapted to abut against a face of said flange portion when in said locking position.

3. A bracket device according to claim 2 wherein said attachment means is integral with said flange portion.

20 4. A bracket device according either claim 1 or claim 2 wherein said attachment means extends from an opening in said proximal end of said operating member, and is slidable in a direction into or out of said proximal end.

25 5. A bracket device according to claim 3 wherein said locking means engages with a distal end of said attachment means such that in use said operating member proximal end separates said locking means and said thin walled section.

30 6. A bracket device according to any one of claims 1 to 5, wherein said attachment means is terminated with a hook which in use engages within an aperture provided in a wall of said thin walled section.

7. A bracket device according to claim 6, wherein an extremity of said hook is adapted to abut an inner wall of said thin walled section, and said wedge member is adapted when in

said locking position to abut against an outer wall of said thin walled section to thereby create a compressive force between said hook and said wedge member to hold said operating member in place.

5        8.        A bracket device according to any one of claim 2 through claim 7, wherein said locking means is a wedge member and a slot is provided in said wedge member which in use substantially straddles said attachment means.

10       9.        A bracket device according to any one of claim 2 and claim 3 through claim 8 when dependant on claim 2, wherein said wedge member includes a channel adapted to encompass said flange portion of said main member.

15       10.       A bracket device according to claim 8, wherein said proximal end of said operating member includes a lower portion which in use locks into said slot to create a reaction force against any rotational torque on said operating member.

11.       A bracket device according to any one of claim 1 through claim 10, wherein said operating member is a step for attachment to a utility pole having a thin wall section.

20       12.       A bracket device according to any one of claim 1 through claim 10, wherein said operating member is a suspension bracket for suspending hardware from a utility pole having a thin wall section.

25       13.       A step for attachment to a utility pole having a thin wall section which comprises:

      a main member having a step member with a flange portion formed at a proximal end thereof, and attachment means extending from a face of said flange portion and terminated in a hook which in use engages within an aperture provided in a wall of said thin walled section, and

30        a wedge member which is adapted to slide in relation to said attachment means and abut against a face of said flange portion when in a locking position, to thereby create a

compressive force between said hook and said wedge member to hold said step member in place.

14. A step as claimed in claim 13 wherein said attachment means is integral with said flange portion and said wedge member interposes between said flange portion and said thin walled section and butts against said face of said flange portion from which said attachment means extends.

15. A step as claimed in claim 13 wherein said attachment means extends from an opening in said flange portion and is slidable in a direction into or out of said flange portion, and said wedge member engages with a distal end of said attachment means such that in use said wedge member abuts against a face of said flange portion facing away from said thin walled section, and said flange portion is interposed between said wedge member and said thin walled section.

16. A wedge member for a bracket device comprising a main body formed with an enclosed slot, and having an inner face and an outer face inclined relative to each other at an angle of from 3.5 to 5 degrees, said inner face and said outer face each being formed with a concave channel of substantially the same shape in cross section along a full length thereof,

17. A main member for a bracket device according to any one of claim 1 through claim 12.

18. A wedge member for a bracket device according to any one of claim 2 through claim 12.

19. A method of providing a bracket device for a thin wall section comprising the steps:

a) forming an aperture in the wall of said thin wall section at a position corresponding to a desired location of a bracket device, and

b) forming a main member having an operating member and attachment means extending from a proximal end of said operating member which in use engages within

said aperture and which includes locking means associated with said attachment means which slides in relation to said attachment means to a locking position to in use secure said attachment means within said aperture.

- 5           20.    A method of fixing a bracket to a thin walled section including a single fixing hole comprising:
- a)    inserting an attachment means of a main member, having an operating member, and attachment means extending from a proximal end of operating member through said
- 10           hole in said thin walled section, and
- b)    sliding a locking means relative to said attachment means to a locking position to create a reaction force between said attachment means and said thin walled section.
- 15           21.    A method of fixing a bracket to a thin walled section as claimed in claim 20 wherein said attachment means is terminated with a hook and said step of inserting said attachment means through said hole in said thin walled section includes rotating said operating member about its proximal end to pass a transversely extending portion of said hook through said hole.
- 20           22.    A bracket device substantially as described herein with reference to Figure 2 through Figure 9.
23.    A method of providing a bracket device for a thin wall section substantially as described herein with reference to Figure 2 through Figure 9.

PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum)

Box No. I TITLE OF INVENTION

## Bracket Device

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

**MacKinnon Bruce Raymond**  
**1/36 Ashby Ave,**  
**St Heliers, Auckland**  
**New Zealand**

☒ This person is also inventor.

Telephone No. **64 9 575 9125**

Facsimile No. **64 9 575 9127**

Teleprinter No.

State (that is, country) of nationality: **New Zealand**

State (that is, country) of residence: **New Zealand**

This person is applicant for the purposes of:



all designated States



all designated States except the United States of America



the United States of America only



the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only

☐ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:



all designated States



all designated States except the United States of America



the United States of America only



the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:



agent



common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

**MacKinnon Bruce Raymond**  
**27 East St**  
**Hamilton**  
**New Zealand**

Telephone No. **64 7 8555006**

Facsimile No.

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

**Regional Patent**

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> <b>AE</b> United Arab Emirates                  | <input checked="" type="checkbox"/> <b>LR</b> Liberia                                   |
| <input checked="" type="checkbox"/> <b>AL</b> Albania                               | <input checked="" type="checkbox"/> <b>LS</b> Lesotho                                   |
| <input checked="" type="checkbox"/> <b>AM</b> Armenia                               | <input checked="" type="checkbox"/> <b>LT</b> Lithuania                                 |
| <input checked="" type="checkbox"/> <b>AT</b> Austria                               | <input checked="" type="checkbox"/> <b>LU</b> Luxembourg                                |
| <input checked="" type="checkbox"/> <b>AU</b> Australia                             | <input checked="" type="checkbox"/> <b>LV</b> Latvia                                    |
| <input checked="" type="checkbox"/> <b>AZ</b> Azerbaijan                            | <input checked="" type="checkbox"/> <b>MA</b> Morocco                                   |
| <input checked="" type="checkbox"/> <b>BA</b> Bosnia and Herzegovina                | <input checked="" type="checkbox"/> <b>MD</b> Republic of Moldova                       |
| <input checked="" type="checkbox"/> <b>BB</b> Barbados                              | <input checked="" type="checkbox"/> <b>MG</b> Madagascar                                |
| <input checked="" type="checkbox"/> <b>BG</b> Bulgaria                              | <input checked="" type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> <b>BR</b> Brazil                                | <input checked="" type="checkbox"/> <b>MN</b> Mongolia                                  |
| <input checked="" type="checkbox"/> <b>BY</b> Belarus                               | <input checked="" type="checkbox"/> <b>MW</b> Malawi                                    |
| <input checked="" type="checkbox"/> <b>CA</b> Canada                                | <input checked="" type="checkbox"/> <b>MX</b> Mexico                                    |
| <input checked="" type="checkbox"/> <b>CH and LI</b> Switzerland and Liechtenstein  | <input checked="" type="checkbox"/> <b>NO</b> Norway                                    |
| <input checked="" type="checkbox"/> <b>CN</b> China                                 | <input checked="" type="checkbox"/> <b>NZ</b> New Zealand                               |
| <input checked="" type="checkbox"/> <b>CR</b> Costa Rica                            | <input checked="" type="checkbox"/> <b>PL</b> Poland                                    |
| <input checked="" type="checkbox"/> <b>CU</b> Cuba                                  | <input checked="" type="checkbox"/> <b>PT</b> Portugal                                  |
| <input checked="" type="checkbox"/> <b>CZ</b> Czech Republic                        | <input checked="" type="checkbox"/> <b>RO</b> Romania                                   |
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| <input checked="" type="checkbox"/> <b>DK</b> Denmark                               | <input checked="" type="checkbox"/> <b>SD</b> Sudan                                     |
| <input checked="" type="checkbox"/> <b>DM</b> Dominica                              | <input checked="" type="checkbox"/> <b>SE</b> Sweden                                    |
| <input checked="" type="checkbox"/> <b>EE</b> Estonia                               | <input checked="" type="checkbox"/> <b>SG</b> Singapore                                 |
| <input checked="" type="checkbox"/> <b>ES</b> Spain                                 | <input checked="" type="checkbox"/> <b>SI</b> Slovenia                                  |
| <input checked="" type="checkbox"/> <b>FI</b> Finland                               | <input checked="" type="checkbox"/> <b>SK</b> Slovakia                                  |
| <input checked="" type="checkbox"/> <b>GB</b> United Kingdom                        | <input checked="" type="checkbox"/> <b>SL</b> Sierra Leone                              |
| <input checked="" type="checkbox"/> <b>GD</b> Grenada                               | <input checked="" type="checkbox"/> <b>TJ</b> Tajikistan                                |
| <input checked="" type="checkbox"/> <b>GE</b> Georgia                               | <input checked="" type="checkbox"/> <b>TM</b> Turkmenistan                              |
| <input checked="" type="checkbox"/> <b>GH</b> Ghana                                 | <input checked="" type="checkbox"/> <b>TR</b> Turkey                                    |
| <input checked="" type="checkbox"/> <b>GM</b> Gambia                                | <input checked="" type="checkbox"/> <b>TT</b> Trinidad and Tobago                       |
| <input checked="" type="checkbox"/> <b>HR</b> Croatia                               | <input checked="" type="checkbox"/> <b>TZ</b> United Republic of Tanzania               |
| <input checked="" type="checkbox"/> <b>HU</b> Hungary                               | <input checked="" type="checkbox"/> <b>UA</b> Ukraine                                   |
| <input checked="" type="checkbox"/> <b>ID</b> Indonesia                             | <input checked="" type="checkbox"/> <b>UG</b> Uganda                                    |
| <input checked="" type="checkbox"/> <b>IL</b> Israel                                | <input checked="" type="checkbox"/> <b>US</b> United States of America                  |
| <input checked="" type="checkbox"/> <b>IN</b> India                                 | <input checked="" type="checkbox"/> <b>UZ</b> Uzbekistan                                |
| <input checked="" type="checkbox"/> <b>IS</b> Iceland                               | <input checked="" type="checkbox"/> <b>VN</b> Viet Nam                                  |
| <input checked="" type="checkbox"/> <b>JP</b> Japan                                 | <input checked="" type="checkbox"/> <b>YU</b> Yugoslavia                                |
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| <input checked="" type="checkbox"/> <b>KG</b> Kyrgyzstan                            | <input checked="" type="checkbox"/> <b>ZW</b> Zimbabwe                                  |
| <input checked="" type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea |   |
| <input checked="" type="checkbox"/> <b>KR</b> Republic of Korea                     |   |
| <input checked="" type="checkbox"/> <b>KZ</b> Kazakhstan                            |   |
| <input checked="" type="checkbox"/> <b>LC</b> Saint Lucia                           |   |
| <input checked="" type="checkbox"/> <b>LK</b> Sri Lanka                             |   |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☐ .....
- ☐ .....

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

<b>Box No. VI PRIORITY CLAIM</b>		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) <b>5 May 1999</b>	<b>335619</b>	<b>New Zealand</b>		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

\* Where the earlier application is an ARPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(1)). See Supplemental Box.

<b>Box No. VII INTERNATIONAL SEARCHING AUTHORITY</b>			
Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):		Request to use results of earlier search; reference to that search (If an earlier search has been carried out by or requested from the International Searching Authority):	
ISA / <b>AU</b>		Date (day/month/year)	Number Country (or regional Office)

<b>Box No. VIII CHECK LIST; LANGUAGE OF FILING</b>	
This international application contains the following number of sheets:	This international application is accompanied by the item(s) marked below:
request : <b>3</b>	1. <input type="checkbox"/> fee calculation sheet
description (excluding sequence listing part) : <b>8</b>	2. <input type="checkbox"/> separate signed power of attorney
claims : <b>3</b>	3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:
abstract : <b>1</b>	4. <input type="checkbox"/> statement explaining lack of signature
drawings : <b>5</b>	5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):
sequence listing part of description :	6. <input type="checkbox"/> translation of international application into (language):
Total number of sheets : <b>20</b>	7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material
	8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form
	9. <input type="checkbox"/> other (specify):

Figure of the drawings which should accompany the abstract: <b>Fig 3</b>	Language of filing of the international application: <b>English</b>
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<b>Box No. IX SIGNATURE OF APPLICANT OR AGENT</b>	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).	
<b>MacKinnon Bruce Raymond</b>	<i>BR MacKinnon</i> <b>5<sup>th</sup> May 2000.</b>

For receiving Office use only		2. Drawings:  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): <b>ISA /</b>	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid,	

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The invention refers to a compression joint in the generic term of the requirement 1 indicated kind.

Compression joints of this kind are called frequent also wedge connections. They are used for the solvable connection by two parts, e.g. felling trees hurrying of furniture.

One from the OS 26 59 603 well-known compression joint consists of a staff, that is provided with a wedge opening running transverse to the bar axis at its end with a part which can be fastened forming a paragraph and at its other free end. The staff is led by a continuous hole of a frame part. The staff becomes secured at its freinen end with a wedge, fitted supernatant at the frame part, by the wedge opening. The cross section and/or the cross-section area of the wedge is at least and of the narrow side.

## CLAIMS

1. Clamp connection (10) of a first divide marked (12), that shows a standing off rod (13), with a frame part (11), that shows a durchgenhendes hole (14) to the most through corners of the rod (13), and with a wedge piece (18), that is braced at the free end (15) of the rod (13) and presses against the frame part (11), through it

that the wedge piece (18) consists of two thighs (20), that by a slit (19) separated are, is open that to the narrower side of the wedge there

that the rod (13) at its free end (15) with two of one another of opposed, by a footpath (17) of divided recesses (16) accommodated is, and

That the wedge piece (18) with both thighs (20) is the footpath (17) comprehensively on the free end (15) of the rod (13) of the plug-in type.

2. Clamp connection (10) after claim 1, marked, would plan have in that both recesses (16) parallel ground areas (23).
3. Clamp connection (10) after claim 1 or 2, marked, in that the external forehead areas (22) of both recesses (16) to the breadth